Distinction between Phytomyza horticola Goureau and P. syngenesiae (Hardy) (Diptera, Agromyzidae) [1]

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The widespread and very polyphagous leafminer formerly known as *Phytomyza atricornis* Meigen or *P. chrysanthemi* Kowarz, as well as by several less-used names, has been shown by Griffiths (1967) to consist of a complex of 5 species: *P. aragonensis* Griffiths (Spain; in leaves of *Lactuca tenerrima*), *P. lindbergi* Spencer (Canary Islands; host unknown), *P. jarfarella* Hendel (Jugoslavia to Iceland; in leaves of *Taraxacum* and *Leontodon* species), *P. horticola* Goureau (widespread; polyphagous), and *P. syngenesiae* (Hardy) (widespread; polyphagous). Because type specimens of *P. atricornis* appear to be lost and inasmuch as numerous records in the literature under that name no longer can be referred to the correct species, Griffiths has decided that it is best to abandon the name and to consider *P. atricornis* a *species dubia*.

Only *P. syngenesiae* of this group has been found in the Americas (Canada and United States). The other widespread and economically important species, *P. horticola*, according to Griffiths, is distinguishable from *P. syngenesiae* virtually only by details of the male postabdomen. These differences may be summarized as follows:

Aedeagus with distiphallus strongly developed, divergent from base (sclerotic portion from apical view V-shaped); mesophallus little or not reflexed apically; blade of sperm pump strongly deflected to one side; acrostichal hairs usually completely absent..... **P. horticola** Goureau

Aedeagus with distiphallus more weakly developed, divergent only towards apex (sclerotic part Y-shaped from apical view); mesophallus strongly reflexed apically; blade of sperm pump fan-shaped, roughly symmetrical; 1–4 acrostichal hairs frequently present..... **P. syngenesiae** (Hardy)

In order to recognize *P. horticola* more easily in intercepted material, I examined specimens in the U. S. National Museum collection, including series determined by Griffiths, in a search for non-genitalic characters; however, I could do no more than confirm Griffith's conclusions. Griffith's

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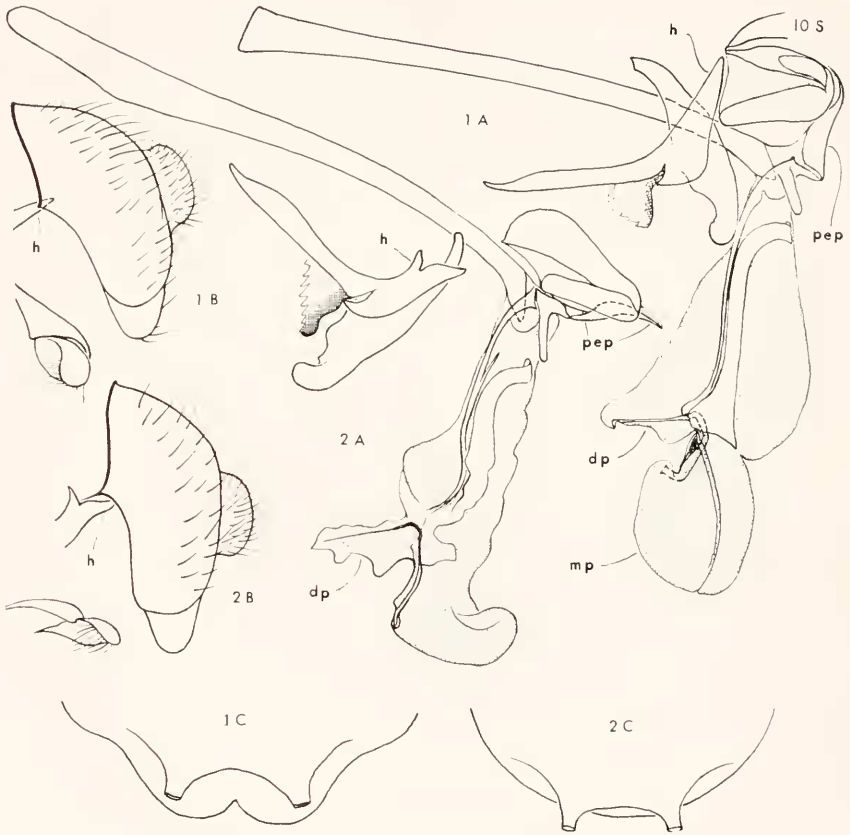
figures 12–15 (*P. syngenesiae*) and 16–20 (*P. horticola*) show only the sperm pump and the aedeagus with only partial outlines of membranous structures, as well as the surstylus of *P. horticola* only. Specimens macerated in NaOH solution, and even those freshly-killed, show a number of additional postabdominal characters. Such may be seen in figures 1 and 2, prepared from material macerated in NaOH solution and drawn while the postabdomen was supported in water. In *P. syngenesiae*, I would draw attention especially to the acutely projecting tip of the pro-



Details of *Phytomyza* species. FIG. 1. *P. horticola* Goureau, New Delhi, India, reared from peas. FIG. 2. *P. syngenesiae* (Hardy), Alameda County, California, reared from chrysanthemum. A, male inner copulatory apparatus (phallosome), profile; B, epandrium, profile, with oblique mediventral view of surstylus; C, hind end of puparium, dorsal view; dp, distiphallus; h, hypandium; mp, mesophallus; pep, proepiphallus; 10S, 10th sternum (not shown in FIG. 2).

epiphallus (*pep*), which is often visible in untreated killed specimens, and the bifurcate condition of the lateral arms of the hypandrium (*h*) at their point of junction with the epandrium. The surstylus of *P. syngenesiae* protrudes somewhat farther than that of *P. horticola* and bears longer hairs on its mesal face, none of which are visible in profile.

Inasmuch as these flies are known to pupate within their mines, puparia may often be found in intercepted plant material. I examined a few available puparia of *P. horticola* and several of *P. syngenesiae* and found them very similar to each other, but when seen from a directly dorsal view I noted a distinct difference in the general posterior outline and the relative extension of the posterior spiracles. In *P. horticola* (fig. 1C), the general outline is sinuate with a well-developed apical emargination and the posterior spiracles do not extend beyond the outline; in *P. syngenesiae* (fig. 2C), the outline is evenly coarctate and the spiracles project beyond the outline. No comparable larvae of both species were available.

Reference Cited

Griffiths, G. C. D. 1967. Revision of the *Phytomyza syngenesiae* group (Diptera, Agromyzidae), including species hitherto known as "*Phytomyza atricornia* Meigen." Stuttgart. Beitr. Naturk. 177: 1–28.